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Forest Insect and Disease Management

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BIOLOGICAL
EVALUATION R2-77-8

SURVEYS OF LODGEPOLE PINE
STANDS FOR DWARF MISTLETOE AND
COMANDRA RUST

Wind River Ranger District
Shoshone National Forest

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Rocky Mountain Region

U.S. Department of Agriculture Forest Service

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INTRODUCTION

At the request of Shoshone National Forest (Ollie Scott) and Wind River Ranger District personnel (Mike Ward), Dave Johnson, Plant Pathologist, assisted District personnel on June 6-10, 1977 in gathering information for lodgepole pine stands scheduled for overstory removal and thinning. These stands are located in the vicinity of Snowshoe Creek and Crooked Creek, Wind River Ranger District.

A summary of the data collected from 28 stands was forwarded to the District in July 1977 as a guide in preparing timber contracts and layout of sales (Refer to memo 5200 Forest Insect and Disease Control, Snowshoe Creek and Crooked Creek, Wind River Ranger District, Summary Data Sheets - dated July 7, 1977).

SURVEY PROCEDURE

Individual stand information was gathered on variable radius plots (BAF 10) located at 2, 4 or 8 chain intervals along transects parallel to the long axis of each stand, as determined from compartment maps supplied by the District.

The following information was recorded for all trees over 2.0 inches d.b.h. and 6 feet in height on the plot: tree species, d.b.h., crown class, dwarf mistletoe rating (DMR) on a scale of 0-6 1/; and comandra rust rating (CRR) on a scale of 0-8 2/.

1/ Hawksworth, F. G. (In preparation). Dwarf mistletoe rating systems, with particular emphasis on the 6-class system. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report.

2/ Brown, D. H. 1977. Management guidelines for lodgepole pine stands infected with comandra blister rust and dwarf mistletoe. USDA Forest Service, Forest Insect and Disease Management, Rocky Mountain Region, Technical Report R2-9, 21 pp.

RESULTS AND RECOMMENDATIONS

The Appendix summary sheet gives individual stand information, listed by compartment and stand number, together with a recommendation on priority of the stand for thinning. A separate rating of the stands and compartments is presented in Table 1.

All trees over 8.0 inches d.b.h. will be harvested in overstory removal sales; therefore, to determine the average stand diameter and disease condition of these stands for thinning, trees over 8.0 inches d.b.h. were excluded during computation of stand parameters. A separate computation was made to determine the numbers of trees per acre 8 inches and larger (See Appendix).

For each stand the disease information was used to rate the stand for treatment. A rating of high was used for stands that have highest priority for thinning; medium was used for stands of moderate priority for thinning; low was used for stands of lowest priority for thinning. In general, stands were rated lower in priority for thinning where 80% or more of stems were infected with dwarf mistletoe and the average stand DMR was 2.0 or greater. In these stands, stocking would probably be reduced below regional standards if all infected trees were cut in the thinning operation.

It is also desirable to remove any lodgepole pine with dwarf mistletoe infection in the upper half of the crown and discriminate against any tree with both comandra rust infection and dwarf mistletoe. Any lodgepole with stem cankers in the middle or lower third of the crown should also be removed. All overstory trees should be removed either as a part of the thinning contract or in a separate operation.

Limber pine, Engelmann spruce and true fir were present throughout the understory of many stands. Where possible, these non-host tree species, which are not susceptible to the lodgepole pine dwarf mistletoe *(Arceuthobium americanum)*, should be selected as leave trees to diversify the species in these stands.

Table 1. Listing of lodgepole pine stands, by compartment and stand number, for priority for thinning, Wind River Ranger District, Shoshone National Forest

High	Medium	Low
16-14-01	16-14-10	16-11-17
16-14-02	16-14-11	16-11-21
16-14-03	16-14-16	16-14-07
17-11-09	17-11-07	16-14-13
17-11-11	17-12-09	16-14-14
17-11-12	17-12-11	17-11-08
17-12-05	17-12-15	17-12-02
17-12-10	17-12-21	17-12-26
17-12-12		17-12-34
17-12-13		17-12-36

High = Highest priority for thinning

Medium = Moderate priority for thinning

Low = Lowest priority for thinning

A P P E N D I X

SUMMARY SHEET

Key: DM = dwarf mistletoe
DMR = dwarf mistletoe rating
CR = comandra rust

Stand identification: 17-11-07
Ave. diam. LPP (inches): 5.0
% LPP with DM: 81.3
% LPP with CR: 19.7
Ave. LPP stand DMR: 2.4
Trees/acre 8 inches and larger: 91.7
Priority for thinning: medium

Stand identification: 17-11-08
Ave. diam. LPP (inches): 3.9
% LPP with DM: 95.9
% LPP with CR: 4.9
Ave. LPP stand DMR: 2.9
Trees/acre 8 inches and larger: 70.8
Priority for thinning: low

Stand identification: 17-11-09
Ave. diam. LPP (inches): 4.3
% LPP with DM: 32.3
% LPP with CR: 12.5
Ave. LPP stand DMR: 0.5
Trees/acre 8 inches and larger: 50.8
Priority for thinning: high

Stand identification: 17-11-11
Ave. diam. LPP (inches): 4.1
% LPP with DM: 5.4
% LPP with CR: 7.1
Ave. LPP stand DMR: 0.3
Trees/acre 8 inches and larger: 46.7
Priority for thinning: high

Stand identification: 17-11-12
Ave. diam. LPP (inches): 4.2
% LPP with DM: 25.2
% LPP with CR: 11.9
Ave. LPP stand DMR: 0.8
Trees/acre 8 inches and larger: 70.7
Priority for thinning: high

Stand identification: 17-12-02
Ave. diam. LPP (inches): 3.2
% LPP with DM: 99.5
% LPP with CR: 6.1
Ave. LPP stand DMR: 3.4
Trees/acre 8 inches and larger: 47.3
Priority for thinning: low

Stand identification: 17-12-05
Ave. diam. LPP (inches): 4.8
% LPP with DM: 5.6
% LPP with CR: 18.6
Ave. LPP stand DMR: 0.2
Trees/acre 8 inches and larger: 45.7
Priority for thinning: high

Stand identification: 17-12-09
Ave. diam. LPP (inches): 4.6
% LPP with DM: 37.4
% LPP with CR: 20.6
Ave. LPP stand DMR: 1.1
Trees/acre 8 inches and larger: 50.1
Priority for thinning: medium

Stand identification: 17-12-10
Ave. diam. LPP (inches): 5.1
% LPP with DM: 18.1
% LPP with CR: 34.0
Ave. LPP stand DMR: 0.4
Trees/acre 8 inches and larger: 74.4
Priority for thinning: high

Stand identification: 17-12-11
Ave. diam. LPP (inches): 4.6
% LPP with DM: 74.9
% LPP with CR: 9.6
Ave. LPP stand DMR: 9.6
Trees/acre 8 inches and larger: 72.1
Priority for thinning: medium

Stand identification: 17-12-12
Ave. diam. LPP (inches): 3.1
% LPP with DM: 17.4
% LPP with CR: 0
Ave. LPP stand DMR: 0.3
Trees/acre 8 inches and larger: 30.5
Priority for thinning: high

Stand identification: 17-12-13
Ave. diam. LPP (inches): 5.4
% LPP with DM: 19.9
% LPP with CR: 6.6
Ave. LPP stand DMR: 0.9
Trees/acre 8 inches and larger: 126.3
Priority for thinning: high

Stand identification: 17-12-15
Ave. diam. LPP (inches): 4.0
% LPP with DM: 59.9
% LPP with CR: 37.5
Ave. LPP stand DMR: 1.3
Trees/acre 8 inches and larger: 72.4
Priority for thinning: medium

Stand identification: 17-12-21
Ave. diam. LPP (inches): 3.6
% LPP with DM: 46.1
% LPP with CR: 8.1
Ave. LPP stand DMR: 0.9
Trees/acre 8 inches and larger: 93.9
Priority for thinning: medium

Stand identification: 17-12-26
Ave. diam. LPP (inches): 4.6
% LPP with DM: 77.3
% LPP with CR: 27.2
Ave. LPP stand DMR: 1.8
Trees/acre 8 inches and larger: 95.1
Priority for thinning: low

Stand identification: 17-12-34
Ave. diam. LPP (inches): 3.4
% LPP with DM: 91.1
% LPP with CR: 2.8
Ave. LPP stand DMR: 2.8
Trees/acre 8 inches and larger: 69.7
Priority for thinning: low

Stand identification: 17-12-36
Ave. diam. LPP (inches): 4.0
% LPP with DM: 85.1
% LPP with CR: 8.3
Ave. LPP stand DMR: 2.7
Trees/acre 8 inches and larger: 132.7
Priority for thinning: low

Stand identification: 16-14-01
Ave. diam. LPP (inches): 3.3
% LPP with DM: 13.2
% LPP with CR: 56.8
Ave. LPP stand DMR: 0.2
Trees/acre 8 inches and larger: 20.3
Priority for thinning: high

Stand identification: 16-14-02
Ave. diam. LPP (inches): 3.7
% LPP with DM: 22.6
% LPP with CR: 27.4
Ave. LPP stand DMR: 0.2
Trees/acre 8 inches and larger: 72.0
Priority for thinning: high

Stand identification: 16-14-03
Ave. diam. LPP (inches): 4.4
% LPP with DM: 21.4
% LPP with CR: 33.7
Ave. LPP stand DMR: 0.4
Trees/acre 8 inches and larger: 49.3
Priority for thinning: high

Stand identification: 16-14-07
Ave. diam. LPP (inches): 3.2
% LPP with DM: 86.3
% LPP with CR: 29.1
Ave. LPP stand DMR: 3.2
Trees/acre 8 inches and larger: 47.1
Priority for thinning: low

Stand identification: 16-14-10
Ave. diam. LPP (inches): 4.3
% LPP with DM: 74.3
% LPP with CR: 18.6
Ave. LPP stand DMR: 2.0
Trees/acre 8 inches and larger: 34.6
Priority for thinning: medium

Stand identification: 16-14-11
Ave. diam. LPP (inches): 4.5
% LPP with DM: 57.3
% LPP with CR: 29.2
Ave. LPP stand DMR: 1.59
Trees/acre 8 inches and larger: 60.6
Priority for thinning: medium

Stand identification: 16-14-13
Ave. diam. LPP (inches): 4.8
% LPP with DM: 100.0
% LPP with CR: 15.0
Ave. LPP stand DMR: 3.6
Trees/acre 8 inches and larger: 48.6
Priority for thinning: low

Stand identification: 16-14-14
Ave. diam. LPP (inches): 3.3
% LPP with DM: 98.7
% LPP with CR: 6.90
Ave. LPP stand DMR: 3.6
Trees/acre 8 inches and larger: 28.2
Priority for thinning: low

Stand identification: 16-14-16
Ave. diam. LPP (inches): 4.3
% LPP with DM: 76.2
% LPP with CR: 41.9
Ave. LPP stand DMR: 2.5
Trees/acre 8 inches and larger: 76.0
Priority for thinning: medium

Stand identification: 16-11-17
Ave. diam. LPP (inches): 3.3
% LPP with DM: 95.0
% LPP with CR: 15.3
Ave. LPP stand DMR: 3.4
Trees/acre 8 inches and larger: 30.6
Priority for thinning: low

Stand identification: 16-11-21
Ave. diam. LPP (inches): 4.4
% LPP with DM: 83.9
% LPP with CR: 32.6
Ave. LPP stand DMR: 2.9
Trees/acre 8 inches and larger: 92.4
Priority for thinning: low